Hiring Challenge Tasks

Task 1 -

Given an image, detect/segment the circular region in the image. Also, write an algorithm to evaluate whether a given pixel is inside it or outside it?

Note program should expect inputs as follows:

```
python solution.py data/task_1/coin1.jpeg 10,43
```

where coin1.jpeg is the input image and (10,43) is the x,y-coordinate of the pixel to test.

Print the result in ‘Outside’ or ‘Inside’ in the terminal or anywhere on the image. Plot the outline of the segmented/detected region on the image along with the point. Display the output image using opencv.

Please ensure images in the folder works for your algorithm.

Sample Input

Sample Output

Task 2 -

In this task, you need to implement a segmentation pipeline from scratch. This dataset contains a large number of segmented nuclei images. The images were acquired under a variety of conditions and vary in the cell type, magnification, and imaging modality (brightfield vs. fluorescence). The dataset is designed to challenge an algorithm's ability to generalize across these variations. In the data/task_2 folder, you will find 2 sub-folders:

- images contains the image file.
- masks contain the segmented masks of each nucleus.

You need to process the data pipeline and implement any segmentation network. For example, UNet, Segnet, PSPNet, etc. You need not train the networks as we would only be judging your implementation skills.

Also, prepare a document consisting of the techniques you could implement on this type of dataset including the links to helpful resources. You can use libraries as well as github for completing this task. All codes should be well documented.

Share all the files required to start training along with the document in a zipped folder. Please note that you can share the python script for training or a jupyter notebook as well, but it should not get into any errors. If you use any specific version of any framework or library, include that in the document as well as the notebook.

You have **1 week** to complete these tasks. Feel free to ask any questions or doubts.

Good Luck.